Making School Meaningful: Linking Psychology of Education to Meaning in Life

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Abstract

There is little research about making instruction at school meaningful. This is surprising given that ample research suggests that many students do not find school a meaningful place, as documented by decline in interest during middle school, the frequency of boredom at school, and decline in search for meaning among high school students. This article starts with an outline that considers both objective and subjective meaning in life. A review on different aspects of meaning in school, such as teaching meaning, purpose, identity, coherence, caring, aesthetics, and agency, suggest that many ways to improve meaning in school have been underused and understudied. The inclusion of the philosophy of meaning in life extends the scope of research on interest by adding new components of objective meaning that may enrich school activities. This article will review both what has been done and what needs to be done. The article concludes that taking the perspective of meaning in life into account would open new avenues for empirical research in educational psychology.

“I do not know a better argument for an optimistic view of mankind, no better proof of their indestructible love for truth and decency, of their originality and stubbornness and health, than the fact that this devastating system of education has not utterly ruined them.”

(Popper, 2007/1945, 144).

Popper’s quote is just one example that expresses a commonplace view that much of school education is meaningless. Unfortunately, meaningfulness is rarely measured in educational psychology. Nevertheless, several lines of research suggest that many students do not find meaning in school.

First, interest in school subjects tends to decrease with age (Hidi and Harackiewicz, 2000), particularly in the domain of mathematics during the middle school years (e.g. Fredricks and Eccles, 2002; Frenzel, Goetz, Pekrun, and Watt, 2010).

Disinterest continues in college. For example, Perkins, Gratny, Adams, Finkelstein, and Wieman (2006) found that interest in physics declined during a semester-long introductory calculus-based mechanics course. High dropout rates from school and college follow the decline in interest. Average graduation rates in the US are not much above 50% (see Carnes, 2014). Such dropout rates, together with a decline in interest are a major challenge for Western societies (see Hidi and Harackiewicz, 2000).

Another observation is widespread boredom at school (e.g., Pekrun, Goetz, Daniels, Stupinsky, and Perry, 2010). Boredom can be seen as an indicator of meaninglessness because people who experience boredom report that they think a situation does not serve any important purpose and want to do something more meaningful (van Tilburg and Igou, 2012).

In addition to decline in interest and experience of boredom, a study by Twenge, Campbell, and Freeman (2012) revealed that meaning in life became a less prioritized goal among high school seniors during the last decades. While “developing a meaningful

philosophy of life” and “finding purpose and meaning in my life” declined most, “being very well off financially” and “being a leader in my community” were the life goals that increased most during the same period. Monetary success overtook meaning in life as life goal.

In conclusion, research on interest, boredom, and the pursuit of meaning in life reveals that many students do not see their daily learning as being meaningful. With the exception of some philosophers of education (see Schinkel, De Ruyter, and Aviram, 2016) and existential educators in the lineage of Viktor Frankl (Waibel, 2011), there is little work in education that explicitly asks for meaning in education. To illustrate, a major reference work like the *International Encyclopedia of Education* (Peterson, Baker, and McGaw, 2010) does not feature entries on meaning or meaningfulness in school. In educational psychology, there is hardly any empirical research that addresses the question how school could be made more meaningful. Even edited books on meaning in life discuss meaning in psychotherapy (Mascaro, 2014) or at work (Dik, Steger, Fitch-Martin, and Onder, 2013) but not at school or in education. This is surprising, given that ample research in work psychology documents that perceived meaningfulness influences various variables that are also relevant to school education, such as motivation, absenteeism, engagement, (job) satisfaction, empowerment, stress, individual performance, and personal fulfilment (see Rosso, Dekas, and Wrzesniewski, 2010).

In what follows, I define meaning in life and then review psychological research from different aspects that make up meaning in life. The focus will be on meaning in school from the viewpoint of students because the viewpoint of teachers would require a review of meaning at work, which is outside the scope of this article. While the primary goal is to review the extant literature on meaning at school, a secondary goal is to reveal the usefulness of excursions into the philosophical literature to find new questions for psychological research. The philosophy of meaning in life provides fruitful hypotheses for research in educational psychology.

What is Meaning in Life?

Traditional philosophy and theology addressed the question of meaning *of* life. ; modern philosophers ask the question what meaning *in* life is (see Metz, 2013, for this and the following points). I do not provide a fine-grained definition of the term *meaning in life* but the following points are essential for discussing meaning in school. First, meaning relates to different ends beyond pleasure and the satisfaction of biological and material needs. Asking about meaning is asking about what activities are worth pursuing for their own sake. Second, the unit of analysis is not the whole life but includes also parts of life albeit parts of life may constitute meaning for the whole life. Third, activities and events can have more or less meaning. While some approaches, according to Metz, tended to view individual lives categorically as meaningful or meaningless, modern theorists advocate a more quantitative approach and view life segments and life as a whole as more or less meaningful. His analysis led Metz to support an objectivist account that sees meaning in the pursuit of the true, the good, and the beautiful. Although this review does not limit meaning to these three attributes and includes beyond knowledge about meaning (roughly corresponding to the true), caring (good), and aesthetic experience (beautiful) meaning from creating identity, maintaining tradition or from agency, it is a good starting point. Going beyond objectivist views of meaning, psychologists usually define meaning in life from a subjectivist standpoint, and some theorists presented definitions that take the interaction between objective and subjective meaning into account.

Objective and Subjective Meaning

The main difference between psychological theory and philosophical systems is their stance on whether a person's meaning in life is constituted by a person's subjective judgments (subjectivism) or by objective factors outside the person (objectivism). Subjectivism is popular among psychologists because meaning or values – the latter are prescriptions for what to do

and for what is important (Rokeach, 1973) – depend solely on the cognitive representations and judgments of a person, making it an object of psychological research (see Baumeister, 1991; George and Park, 2016). This view renders the problem of meaning and values a psychological problem. While most psychological theories on meaning in life are purely subjectivist, philosophers have uncovered deep problems with such views. The main problem is that anything goes; there is no objective way to determine whether an action or a person's life is meaningful. According to subjectivism, if a terrorist like the Norwegian Anders Breivik thinks that killing minors is meaningful, then his act has meaning, an outcome most people – including academics – not only find counterintuitive but abominable (see Kristjánsson, 2013; MacIntyre, 1981, for criticisms of value subjectivism).

Philosophers therefore developed systems of objective meaning that determine whether part or the whole of a life are meaningful (see Metz, 2013, for an overview; for an alternative classification, see Allen, 1991). Note that meaning objectivism does not preclude meaning pluralism (see Berlin, 1969, for a similar argument on values) because different cultures and situations may afford different meaningful activities, and different people have different capacities to respond to various affordances. Such a view supports the notion that life may be meaningful even if an individual does not think so; for example, if this person has a positive impact on other people's life without knowing it (cf. Singer's, 1996, concept of *significance*). Subjective feelings play a role insofar as they enhance objective meaning. Wolf (2010) claims that a life is not meaningful if a person does not subjectively judge it to be so, as spelled out in her Fitting Fulfilment View.

Wolf's view is interesting because it considers the interaction between objective and subjective aspects of meaning and therefore distinguishes between two components that will be in the focus of this article. *Objective meaning* is related to actions and parts of life that provide meaning without regard of whether a person herself considers these parts as meaningful.

Subjective meaning is the personal experience of meaningfulness. This interactive approach to meaning is fruitful for education because it enables the distinction among four outcomes of actions as a result of crossing objective meaning with subjective meaning (for similar interactive approaches, see Curren & Kotzee, 2014; Kristjánsson, 2007).

Insert Table 1 about here

As Table 1 illustrates, education at school could have both objective meaning and be perceived as meaningful (Cell A). This would be the ideal case and according to Wolf (2010) the only one that confers meaning. When education is meaningful but students think it lacks meaning (Cell B) the task of school consists in making students aware of the objective meaning inherent in the learning materials. Note that in the subjectivist view most frequently held by psychologists, Cell B would not exist and the possibility that the school has to communicate objective meaning therefore not considered. This is different from the case where education lacks both objective and subjective meaning (Cell C). In this case, school has to make materials objectively meaningful, or introduce new facets of meaning beyond the acquisition of relevant knowledge. Finally, materials may not be objectively meaningful but students perceive them as meaningful (Cell D). If such cases existed, they would amount to illusory beliefs and experiences. However, I do not discuss the cases in Cell D; first, because there is to my knowledge little evidence that such biases indeed exist; and second, even if they exist, they should not be eliminated by convincing students that the materials are meaningless. Instead educators would have to remove materials from the curriculum or amend them to become objectively meaningful. If students continue to experience these modified materials as meaningful, we have the optimal case of Cell A; else, Cell B.

Despite its currency in philosophy, the problem with objectivism is that it is difficult to determine what the criteria for objective meaning are. While subjectivism is easy to handle for psychologists, objectivism about meaning in life is not because they would have to decide which of the multiple meanings is right. It prevents researchers from being value-free because they can no longer relegate meaning to the individuals they examine. However, there is a way to circumvent this conundrum.

Conditional Objectivism and Meaning in Education

Based on the philosophy of history by Morton White (1965), Reber (2016) sketched a procedure that allows psychologists to deal with objective multiple values in a value-neutral way. Let us call this approach *conditional objectivism*. The first assumption is that if psychologists look at a phenomenon from a certain standpoint, they do not have to endorse the standpoint. For example, if researchers examined harmful psychological consequences of daycare for infants (see, e.g., Belsky, 2003), this does not mean that the researcher necessarily objects to daycare. Second, and most importantly, psychologists could use conditional statements to make clear that they are looking at a phenomenon from a certain viewpoint, or even better, to look at practical implications from different viewpoints. For example, a psychologist who examines consequences of daycare may write interpretations of the findings and their implications both from the viewpoint of proponents and opponents of infant daycare.

When it comes to educational contexts, psychologists do not reflect on meaning in life for students but adopt the dominant purpose of education in society (see Kvale, 2003). Purpose is linked to stable and far-reaching life goals that people want to accomplish and at the same time are consequential for the world beyond the self (Bronk, 2013; Damon, 2008; Han, 2015). In light of the definition of meaning as related to activities that are worth pursuing for their own sake and go beyond biological and materials needs, making money or attaining a leadership position is not meaningful in itself and can therefore not be seen as a purpose that

serves meaning in life¹. Purpose is more specific than meaning because the latter not necessarily includes life goals. The prevalent purpose of present school education is to prepare students for the requirements of a knowledge economy. Current psychological research on learning or interest does not question the purpose of school but accepts it as a given. Although the long-term purpose of preparing pupils for the economy represents only one side of meaning in life, it is implicitly accepted by most educational psychologists.

There are many potential sources of meaning in life for students. For the present overview, it is less important to follow an overarching theory (Metz, 2013) or statistically confirmed model (see George and Park, 2016) than to list the most suitable kinds of meanings in life, as determined by psychological research or by philosophical inquiry. There are seven kinds of meaning in life I shall review. (1) *Religious or classic education about meaning in life*. (2) Preparation for the economy that most researchers in educational psychology seem to consider to be the main *purpose* in the life of a student. (3) *Identity* through familiarity with one's history and culture. (4) *Coherence*, which has been shown to contribute to meaning in life (George and Park, 2016) (5) *Caring for others*, which is a way to increase meaning that is commonly recognized but often neglected at school. (6) *Aesthetic experiences* are supposed to be part of flourishing and meaning in life (see Lomas, 2016). (7) Finally, I turn to *human agency*, which according to existential philosophers is the only source of meaning in life (most prominently Sartre, 1948/1946).

Note that conditional objectivism does not dissolve the intricacies of defining and creating objective meaning in a non-controversial manner but circumvents the problem by assuming, for the sake of argument and empirical exploration, that objective meaning and the means to achieve it were uncontroversial. However, within certain societies and cultures, the ends that define objective meaning and the means to achieve it may be uncontroversial in practice.

The allocation of a topic, such as peer tutoring, to one kind of objective meaning, such as caring, may seem arbitrary, and one could conceive of other allocations, for example human agency. However, the aim of this article is not a classification of psychological phenomena within realms of meaning but to review research within all kinds of meaning in life. Most importantly, and in line with conditional objectivism, we can review the data through the lens of each kind of meaning by stating that from the viewpoint that X possesses objective meaning, research findings support the recommendation Y. For example, only if caring is objectively meaningful (X), then research (to be discussed later) has shown that peer-tutoring can be recommended to increase subjective meaning at school (Y).

Creating Meaning in School

The following review on creating meaning at school will reveal two shortcomings in current research in educational psychology. First, educational psychology deals only with a small subset of objective meanings. As the outcome of literature searches shows, educational psychologists have rarely addressed meaning that stems from religious education, teaching of meaning, coherence in life, caring for others, or aesthetics. Most research activity has been invested in the purpose of education, and here mainly in preparing students for the economy.

The other shortcoming pertains to subjective meaning. Students often do not see the meaning of schooling, and educational psychologists focus on conveying the meaning of preparation for the economy. However, even if educational researchers acknowledged a broader range of sources of objective meaning, students would not automatically see subjective meaning. Therefore, and in accordance with the Fitting Fulfilment View (Wolf, 2010), research has to find ways to induce subjective meaning once objective meaning is acknowledged.

Finally, different ways to convey meaning may require different kinds of curricular changes (see Table 2, rightmost column). First, teachers may simply teach knowledge about meaning, for example in teaching of religion, meaning, purpose or traditions to create identity. To attain coherence, teachers do not teach certain content but try to achieve integration of knowledge. Second, schools may convey

attitudes regarding religion, purpose, or identity. Again, for coherence, teachers do not convey attitudes directly but try to achieve integration of knowledge base and value-based attitudes. The third option is to enhance the experience of students (see Reber, 2016; Reber & Greifeneder, 2017), either by conveying not only epistemic but also aesthetic aspects of subject matter or by letting students experience self-determination by being the agents of their own learning. The distinction among knowledge, attitude, and experience is a rough one but sufficient for the illustration of possible curricular changes.

Education about Meaning

The most straightforward possibility to convey subjective meaning to the life of students is to teach them about objective meaning. This could be done in at least two ways. First, by adhering to a religious creed that provides subjective meaning in life to their believers (see Emmons, 2005; Van Dongeren, Hook, and Davis, 2013). Although supernatural approaches are not sufficient for a philosophical approach to meaning, naturalist approaches to meaning in life do not preclude supernatural explanations (see Metz, 2013). By adhering to a religious creed, people may acquire a system of meaning that guides their action in a top-down manner. Moreover, knowing one's place in the order of things and knowing that God loves and cares for each individual might provide believers with a sense of subjective meaning that is hard to achieve through secular means because the latter lack religion's value basis (see Baumeister's, 1991, notion of value gap).

The second way to learn about meaning is similar to the first, but instead of examining meaning through religious scripture, students learn about the meaning of life through studying classic philosophy and literature (Kronman, 2007). Philosophers asked questions about the good life (for example Aristotle, 2004/ca. 350 BCE in his *Nicomachean Ethics*) and therefore provide direct answers to the quest for meaning. While learning about meaning in life is direct in philosophy, it is more indirect in literature. The latter provides readers with situations that have important moral implications but are rare in a person's life, such as forms of love, war, or

crime that readers do not know from first-hand experience (Frevert et al. 2014, Nussbaum, 1990, Robinson, 2005). Literature teaches people about values and what other people find meaningful.

There is virtually no empirical research about how to examine meaning through religious scripture, philosophy, or literature.² Apart from faith-based schools, religious education in secular schools in most countries has become instruction in the ethnography of religious beliefs, in line with a scientific view on religion (Watson, 2016). However, the observation that religious belief is related to meaning in life (see Chamberlain and Zika, 1992) suggests that religious education might have merits in that it provides students with a sense of subjective meaning that secular education does not. Similarly, learning on meaning in life through philosophy and literature may enrich the purposes in life a person might consider.

Preparation for Economy as Purpose of Education

Philosophers and psychologists agree that purpose is an important aspect of meaning in life (Baumeister, 1991; Metz, 2013). Purpose of education – especially to become knowledgeable in order to participate in the workforce and the state in the future – is also the one aspect of objective meaning that is stressed at schools and that educational psychologists have examined extensively. However, the range of purposes that could provide meaning to one's life is much broader than the narrow purpose of preparing for the economy examined in educational psychology (see Bronk, Chapter 6; Han, 2015; Metz, 2013).

Classical expectation x value theories of motivation assume that outcome expectation and value of the outcome determine motivation (Eccles and Wigfield, 2002). Relevant to meaning in life is value. According to theories of motivation and interest, subjective value contributes to engagement and career choice. That is, increasing the subjective sense of value of subject matter is supposed to increase subjective meaning.

In the last decade, Harackiewicz and colleagues developed an intervention to increase the subjective value component of learning materials. This can either be done by directly communicating to students the relevance of materials (e.g., Durik and Harackiewicz, 2007) or by giving students an assignment to write down the potential relevance of learning materials to their everyday life or their future career (e.g., Hulleman and Harackiewicz, 2009; see Durik, Hulleman, and Harackiewicz, 2015; Harackiewicz, Tibbetts, Canning, and Hyde, 2014, for reviews). Hulleman and Harackiewicz (2009) found that writing about utility value changed interest and attitudes of students with low performance expectations. This finding is important because interventions often benefit students who are already interested and well-performing, a phenomenon that has been dubbed the “Matthew-effect”. It hence is a feat to find interventions that help those who usually find least meaning in school.

Interventions to convey the value of subject matter for everyday life have the advantage to connect school with the life of students, an approach already advocated by John Dewey (1956/1899). By contrast, interventions to convey the value of subject matter for future careers have the drawback, compared to connecting value to everyday life that they serve a long-term purpose in the remote future. More importantly, students across the socioeconomic spectrum seem to know about the long-term value of education and aspire to get good grades and to succeed in college (see Oyserman, 2013). These students do not have a problem with aspiration but with identity.

Finding identity as a way to find meaning

Among the things that confer meaning is the search of identity. Identity can be defined as a set of subjective self-definitions that represent values, priorities, social roles, and abilities of a person within a society or community (see Baumeister, 1986). In order to count as identity, such representations have to be stable over time (“continuity” according to Baumeister) and must contain elements that distinguish a person from others (differentiation). In line with

Baumeister and Muraven's (1996) notion that identity describes the complex relationship of a person with social, cultural, and historical context, one way to find meaning in life would be to connect oneself and others to overarching values and goals of a society, going beyond biological or material needs. This can be done in different ways.

Receiving an education in classics, as Kronman (2007) advocated, does not only result in students getting instruction on meaning in life but also on the roots of Western civilization. When scholars in Renaissance Italy began to wonder where the ruins standing around came from, and when learning the Greek language allowed them to read ancient philosophy and literature, they became aware of the long-forgotten origins of European civilization (see Burckhardt, 1990/1860). These scholars apparently saw meaning in digging up the lore of ancient cultures. Similarly, religious education does not only instruct on supernatural notions of meaning in life (Metz, 2013) but links believers to a tradition shared by earlier generations (see Shils, 1981). Other traditions include carrying further a famous name within a family dynasty, such as in nobility, politics, or the military (Metz, 2013), or transmitting the accumulated knowledge of science or a craft from one generation to the next. Being initiated in any kind of tradition, be it familial, communal, religious, political, military, or scientific, may bring about meaning. Conveying the stock of traditions may not least provide the foundations of meaning for teaching and teachers. Note that these forms of identity go beyond biological and material needs. Although one could imagine that a family or military tradition could be maintained to satisfy material needs, it is perfectly plausible to assume that the maintenance of such traditions could provide both objective and subjective meaning due to the awareness that one treasures what ancestors have built. While objective meaning may be defined by society at large or groups within society, its realization seems to depend on the "right" motivations that go beyond selfish needs in a similar way virtue depends on the "right" feelings that accompany an activity (for discussions, see Annas, 2001; Hursthouse, 1999; Reber, 2016).

Research shows that a strong racial identity may shield minorities from harmful effects of prejudice, such as distress (Sellers and Shelton, 2003) or poor academic performance (Thomas, Caldwell, Faison, and Jackson, 2009). Positive identities can be used to increase motivation and presumably subjective meaning in school. Based on surveys (see Oyserman, 2013), Oyserman (2015) starts with the assumption that minority students desire as much to go to college and to avoid a criminal career as majority students do. However, they lack representations of possible selves that carry a positive identity and therefore give up when they encounter difficulties. Oyserman and colleagues (Oyserman, Bybee, and Terry, 2006; see Oyserman, 2015) developed and successfully tested an intervention that addresses the attribution of difficulty to lack of talent. Instead of maintaining a negative academic possible self in the face of difficulties because students think that “this is not for me”, students establish in the course of the intervention a positive academic possible self by learning that difficulties in school are normal and a sign of the importance of a topic.

To summarize, gaining and transmitting identity may help people anchor their self in history of their family, community, and culture. Family stories and knowledge about local history can contribute to build identity and therefore meaning. The studies by Oyserman and colleagues (2006) are among the first to show successful identity-building and its consequences in minority students.

Sense of coherence

Coherence means that a system of propositions is consistent and free of contradictions. Coherence plays an important role in epistemology because it is assumed that a complete and accurate representation of the world should be free of contradictions (see Goldman, 1986). Similarly, coherence in life indicates that there is some overarching integration that renders life as a whole comprehensible (e.g., George and Park, 2016; Martela and Steger, 2016). Such coherence could be created, for example, by integrating personal goals and values with the

requirements of the community one lives in; by making sense of events that at first sight did not fit a person's expectations or desires; or bringing together events that at first seemed incoherent or even contradictory. Although coherence is not a sufficient condition for meaning in life, it may be a necessary condition.

School education does little to increase coherence in cognitive representations of subject matter, let alone of life as a whole. A well-known criticism is the claim that learning at school is partitioned into independent subjects and therefore fragmented (e.g., Leggett and Robertson, 1996). Although educational philosophies may advocate a coherent program that incidentally would result in a coherent life, coherence of life has hardly ever been an explicit goal in modern education, and there is little educational research that directly addresses coherence. Yet there is some educational research on interest that is relevant for achieving coherence.

Moreover, basic research in social psychology about responses to incoherence in order to maintain meaning fits educational research on the role of incoherence in learning. It follows a brief overview of this research.

Coherence and the psychology of interest. In educational contexts, increasing a sense of coherence can be achieved by connecting materials to everyday life or by connecting them to a person's interest. Walkington and Bernacki (2014) distinguished between shallow and deep approaches to connect learning materials to the learner. While deep approaches allows for individualized, personally important connections to the learner, most studies use shallow approaches to customization of the materials, like "fill-in-the-blank" where personal interests or preferences completed the blanks in otherwise identical texts. Using this approach, Høgheim and Reber (2015; 2017; see also Ku & Sullivan, 2000) examined an intervention to increase interest of middle school students in mathematics by filling the blanks in the learning materials with pre-existing out-of-school interests or preferences. Such interests included listening to music by Rihanna or playing "World of Warcraft".

In a study with elementary school students, Renninger, Ewen, and Lasher (2002) examined whether motivation to work on problems in mathematics could be increased by embedding tasks in contexts that featured interests from other domains. They found that interest-based contexts, compared to generic contexts, enabled students to focus on the meaning in a task and offered them an opportunity to make a more personal connection with the subject matter to be learned, which is especially relevant for students with low initial interest.

Example choice is another intervention to increase interest by connecting the learning materials to what students already are interested in (Reber, Hetland, Chen, Norman, and Kobbeltvedt, 2009). For example, when students have to learn probability calculus, they get different examples or topics to choose from. Students are instructed to choose the topic that interests them most. The instruction on probability calculus will be embedded in the topic a student has chosen. Again, the rationale is to make experiences coherent by relating a new topic, here probability calculus, to the existing knowledge base of a student. Indeed, Høgheim and Reber (2015; 2017) found that example choice rendered instruction on probability calculus more interesting, especially among students with low initial interest.

To summarize, researchers developed interventions that are aimed to increase engagement by aligning learning materials to a person's interests and thereby decreasing fragmentation of a person's representation of the self. Such interventions are effective in increasing interest, a finding that suggests that such interventions increase subjective meaning through coherence of a person's knowledge base. After having reviewed evidence for how to create meaning by increasing coherence, we next look at how people restore meaning when they encounter incoherence in their environment.

The role of incoherence in learning. As coherence is a necessary condition for truth, incoherence signals that people do not know the true state of the world and that they need to

intervene to restore coherence and therefore meaning. Research inspired by the meaning maintenance model has shown that violations of coherence prompt activities to reestablish meaning (see Heine, Proulx, and Vohs, 2006).

Interestingly, and without reference to the meaning maintenance model, findings from various studies in educational psychology suggest that incoherence in learning materials often yields superior learning outcomes, presumably because students have to work harder and process information more deeply in order to make the materials more coherent (e.g., D'Mello et al., 2014; McNamara, Kintsch, Songer, and Kintsch, 1996; VanLehn, Siler, Murray, Yamauchi, and Baggett, 2003)..

In one study, Kapur and Bielaczyc (2012) tested so-called productive failures. Students were given ill-defined problems where they apparently failed in their problem-solving efforts. On a posttest on well-structured and complex problems, however, these students outperformed a control group of students that received direct instruction. Incoherence has not only effects on learning but also on interest and curiosity. Perceived knowledge deficits have been shown to increase situational interest (Rotgans and Schmidt, 2014), presumably because there is a gap in coherence of the knowledge structures (see Loewenstein, 1994). To relate these findings to the meaning maintenance model, the natural inclination to restore meaning in the face of incoherence might be utilized by educators to improve learning outcomes.

The findings on incoherence in learning were at a low level, such as reading short texts or solving science problems. The question emerges whether experienced incoherence in life may make individuals think more deeply when searching for meaning. Future research would have to ask whether students experience more subjective meaning when they identify knowledge gaps or have to solve ill-defined problems and therefore create coherence.

Meaning from Caring

Already Urie Bronfenbrenner (1979) lamented in his classic book on the ecology of human development that American youth may grow up to their mid-twenties without having the experience that anybody depends on them. Adolescents from earlier generations helped raise siblings, work in the fields, or earn money for the family. While Bronfenbrenner's view of earlier generations may hold for a large part of youth before 1950, historians have noted that school and university employed teaching methods that were based on drill and endless repetition of texts (Ariès, 1962), and the gap between school and life has been wide before 1950 (see Dewey, 1956/1899, and the quote at the beginning of this article by Popper, 2007/1945).

In line with an ethics of care (see Gilligan, 1982; Noddings, 1984), caring for others yields an alternative source of meaning that is different from learning about meaning, purpose, finding identity, aesthetics, or mere agency. Caring may be the socially most recognized form of meaning because caring as an altruistic activity goes beyond biological and material needs. Although even helping others might have selfish or material ends and therefore not be accompanied by the "right" motivation, as discussed earlier, there is ample testimony of helping for its own sake (see Colby & Damon, 2010).

Research reveals psychological mechanisms underlying the positive consequences of caring. Helping others has been shown to foster well-being (see Post, 2005). There seems to be a need to relate (Deci and Ryan, 1985) or to belong (Baumeister and Leary, 1995) that could be met by helping or collaborating with others. Indeed increased belonging increases meaning in life (Lambert et al., 2013). Two educational practices aim at implementing caring at school: Community service and peer-tutoring.

Community service learning. Community service learning denotes activities that at the same time help to improve the situation of the community and to contribute to student learning.

The evidence for the academic effectiveness and personal meaningfulness of community service learning is sparse but the little extant evidence is promising. In one study with over 22'000 students, Vogelsang and Astin (2000) showed that incorporating community service learning in an academic course improved both academic and leadership outcomes. In line with the idea that caring changes attitudes and is meaningful, students who participated in community service learning as part of a course reported that they later want to choose a service-related career. Despite some questions about the direction of causality, the result suggests that students saw subjective meaning in this activity. Moreover, community service learning is more effective if paired with reflection, which is “the intentional consideration of an experience in light of particular learning objectives” (Hatcher & Bringle, 1997, p. 153; see Eyler, 2002). However, community service learning has only recently arrived in mainstream (but not educational) psychology (Han, Kim, Jeong, & Cohen, 2017; Malin, Ballard, & Damon, 2015; Malin, Han, & Liauw, 2017). Further research has to show under what conditions community service learning at school promotes subjective meaning and which factors undermine such meaning (cf. Malin et al., 2017), in line with findings that activities that are not self-chosen might undermine intrinsic motivation (see Deci and Ryan, 1985)³.

Peer-tutoring. An activity that includes caring for others and therefore objective meaning is peer-tutoring where students teach other students. While most research focused on learning outcomes of peer tutoring, it has been observed that peer-tutoring is experienced as more meaningful, both by the tutors (Sobral, 1994) and the tutees (Sobral 1995). Given that peer-tutors are often as good at transmitting knowledge as teachers (, e.g., Tolsgaard et al., 2007; see Yuet al., 2011), such findings could inspire educators to employ peer-tutoring if they have not already done so. Again, peer-tutoring is not one of the main themes in educational psychology.⁴

Beyond findings on community service and peer-tutoring, there is anecdotal evidence from the educational literature that caring might have powerful effects on student motivation and subjective meaning. In a computer science course, students solved programming problems related to everyday life, such as creating a computer-assisted device adapted to the individual needs of a stroke patient (Buckley 2009). The patient could not speak and barely write. The device enabled him to express via a computer voice what he wanted to communicate. Buckley described how touching it was for both patient and students when the device was delivered; such learning outcomes count for others; they therefore have objective meaning and seem to provide subjective meaning to students.

The Aesthetics of Learning

School curricula focus on the contents to be learned, and educational psychology has successfully provided evidence-based means to optimize learning (Dunlosky, Rawson, Marsh, Nathan, and Willingham, 2013). However, learning materials cannot only be viewed in terms of their truth or utility value but also in terms of their aesthetic appeal. In contrast to utility value, aesthetic appeal (and in fact truth) can be seen as a goal in itself that goes beyond biological and material needs and therefore affords objective meaning.

The most primitive kind of aesthetic experience is a simple affective liking response, as often required in experiments in empirical aesthetics (see Bullock and Reber, 2013, for a critique). There is good reason to believe that affect accompanies every cognitive operation (see Overskeid, 2000; Reber, 2016). As affect feeds into aesthetic experience (see Reber, Schwarz, and Winkielman, 2004), we can assume that every cognitive operation can be viewed from an aesthetic point of view, and that aesthetic experiences are ubiquitous (Saito, 2008; 2017). This aesthetic side of learning has been neglected in most of school education and relegated to arts classes, analogous to the relegation of art from everyday life to museums (Dewey, 2005/1934). Literary works and music are often dissected into their elements but not

appreciated by means other than conceptual analysis (see Noddings, 2003). However, the rules of grammar and mathematics, the workings of mechanics, and the sound of language all have aesthetic sides (e.g., Dewey, 2005/1934, Menninghaus et al., 2015) that would contribute to experiences that may constitute subjective meaning in life.

There is virtually no research on how a sense of beauty in the sciences and humanities could be conveyed to students.⁵ It would be interesting to explore what the alternative is to the technical way mathematics is transmitted or to analysing artworks and poems “to its ruin” (Noddings, 2003, 103).

One way to combine understanding with the aesthetic consists in having an Aha-moment, a pleasurable experience that accompanies insight. In a famous treatise on insights in mathematics and science, Poincaré (1996/1913) described such experiences as an aesthetic emotion (see Topolinski and Reber, 2010, for a more systematic account). Liljedahl (2005) found that first-year biology students who had to attend mathematics courses developed a more positive attitude towards mathematics when they had an Aha-experience in the course of the semester. As Aha-experiences signal that information has been integrated in a new way, they may contribute to a sense of coherence and beauty that enhances subjective meaning; a prediction that awaits further exploration..

Human Agency

Existentialist philosophers claimed that the meaning of life consists in human agency, in making decisions (most prominently Sartre, 1948/1946). Indeed, research findings on perceived self-efficacy (Bandura, 1989), control (Skinner, 1995), and choice (Patall, Cooper, and Robinson, 2008) confirm the important role of the experience of human agency in increasing autonomy, well-being, and interest, suggesting that these variables indeed increase subjective meaning.

Choice is one expression of human agency. Several lines of research have shown that mere choice increases situational interest in learning materials. Flowerday, Schraw and Stevens (2004) showed that when college students could choose between two text packets, they showed higher affective engagement in the task. Importantly, the students chose the text packets without knowing their content – the mere act of choice increased situational interest. Even if choice is on irrelevant aspects of a multimedia environment, students become more interested (Cordova and Lepper, 1996), presumably because of the experience of control students can exert (see Reber et al., 2009). As discussed earlier, choice regarding relevant aspects of the learning materials, such as their connection to interests, may increase the sense of coherence.

Meaning through human agency is in line with the postulated need for autonomy as one of the pillars of intrinsic motivation. There is indeed ample evidence that a sense of autonomy boosts intrinsic motivation while threats to autonomy undermine it (Deci and Ryan, 1985).

Human agency can be exerted by active discovery instead of passive encoding of knowledge. Since its inception, discovery learning has been seen as a more meaningful way of knowledge acquisition than traditional instruction and rote learning content (Bruner, 1961; Papert, 1980). However, pure discovery learning where students have to find out principles without guidance is ineffective (Mayer, 2004), leading to a tension between subjective meaning and expected learning outcomes. A better way to improve learning is guided discovery learning where teachers scaffold materials in a way that students are able to discover the next step (see Alfieri, Brooks, Aldrich, and Tenenbaum, 2011, for a meta-analysis).

Discussion

Let us bring the threads together. Table 2 depicts the different paths to objective meaning in life, the subjective meaning as found in empirical studies, their prevalence in school education, the amount of research done in mainstream educational psychology on this particular topic, and the curricular implications sketched earlier. As can be seen, the little

extant evidence suggests that objective meaning does not always align to subjective meaning. Most importantly, while many school children may see the purpose of education in the long-term, they do not necessarily find the current activities appealing and meaningful, at least not yet. For many paths to objective meaning, such as religious education, learning the classics, coherence, or aesthetics, we do not even know from empirical studies how much subjective meaning they provide in educational settings.

Insert Table 2 about here

The third column in Table 2 is prevalence in school which is a rough measure derived from critiques of the current school system (Kvale, 2003; Noddings, 2003). Prevalence is high only for long-term purpose. Medium in religious teaching does not mean that each child gets some amount of religious education but some children, those at religious schools, get a high amount and others nothing at all. Teaching of *meaning* through classics, philosophy, and literature is not a priority. When children read literature, it is often formal, for example, to analyse texts (see Noddings, 2003). Coherence is not an explicit goal in school, even though there is recognition that learning materials should be customized to out-of-school interests and everyday life. Aesthetics is of medium prevalence because on the one hand, children have art and music education but on the other hand, even art and music are taught in a formal manner that emphasizes conceptual analysis instead of aesthetic appreciation. Moreover, subjects like mathematics and languages are taught in a purely formal way without even considering their aesthetic side. As outlined earlier, proponents of discovery learning take human agency at schools seriously but unfortunately, these methods are ineffective if not carefully guided by teachers. Much more could be done to increase agency and therefore autonomy of pupils.

Finally, despite some positive findings on community service learning and peer-tutoring, teaching methods to let students experience the fruits of caring are uncommon.

The fourth column of Table 2 shows research activity for each of the paths to meaning, mainly derived from how much research literature could be found in educational psychology. As for prevalence, this rough measure has to be taken with caution. Research activity matches quite well with prevalence at school, with purpose being highest. There is virtually no research in educational psychology on teaching of meaning, coherence of overarching cognitive representations, aesthetics, and caring; for the other dimensions of meaning, there is some research but less than for purpose. In sum, this means that research in educational psychology is restricted to a small fraction of possible means that provide objective meaning.

An important problem to consider is how objective meaning, if once acknowledged by educators, could be conveyed in a manner that induces subjective meaning in students. This is essential according to the Fitting Fulfilment View (Wolf, 2010). Reliance on force or duty is doomed to failure because of well-known psychological mechanisms, such as reactance (Brehm, 1966) or the need for autonomy (Deci and Ryan, 1985). One way to induce subjective meaning without force might be to tell student about subjective meaning, as it has been done in utility value interventions (Durik and Harackiewicz, 2007). Similarly, choice underpins human agency and has been shown to result in higher affective engagement at school. In recent decades, community service learning and peer-tutoring have been integrated into curricula and shown to be effective but little is known about their subjective meaning. Other ways to connect subject matter to types of meaning, such as a bolstering learners' identity, increasing the coherence of their life, or supporting the aesthetic side of learning activities, seem to provide promising avenues but have been neglected in educational psychology.

Conclusion

Despite widespread concern about the decline of interest during the middle school years, and despite age-old lamentation about the lack of meaning of school, research in educational psychology has covered just a few aspects of potential means to increase meaning in school. While there is philosophical theorizing about meaning in life, there is a lack of empirical studies in educational contexts (and in psychology in general; see Park, 2010). Moreover, much psychological research used proxies of meaning in life, such as well-being, interest, or engagement in an activity. This is an unsatisfactory state of affairs. Researchers need to measure meaning in life directly despite the fact that the proxies probably are closely related to subjective meaning.

We have seen that school education fails to cover many activities that provide objective meaning. It would be tempting to implement these activities in school curricula. Yet there are two points to consider. First, according to the Fitting Fulfilment View (Wolf, 2010), curriculum developers not only have to consider objective meaning, such as finding identity in history, human agency, or caring. The task of educational psychology is to empirically examine the subjective meaning of activities that carry objective meaning. The second point to consider is the effectiveness of an activity in terms of learning outcomes. The lack of effectiveness of discovery learning mentioned earlier, used as a means to increase agency, is a case in point that empirical studies have to examine whether there is a tension between meaning and effectiveness. Future empirical work may pave the way for enabling activities where meaning – both objective and subjective – and positive learning outcomes are aligned.

Through the inclusion of recent philosophical and psychological theorizing on meaning in life, the current article made clear that there are wide gaps in knowledge where empirical research in educational psychology has the potential to contribute new insights on how to make school a meaningful place.

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Table 1

Objective and subjective meaning

	Subjective Meaning	
	Meaningful	Not Meaningful
Yes	A	B
Objective Meaning		
No	D	C

Table 2

Objective meaning, subjective meaning, prevalence at school, research density, and curricular change

Objective Meaning	Subjective Meaning	Prevalence in School	Research Activity	Curricular Implications
Religious Teaching	?	Medium	Low	Knowledge and Attitude
Teaching of Meaning	?	Low	Low	Knowledge
Purpose	Medium	High	High	Attitude
Identity	High	Medium	Medium	Knowledge and Attitude
Coherence	?	Low	Low	Integration of Knowledge and Attitude
Caring	High	Medium	Low	Attitude
Aesthetics	?	Medium	Low	Experience
Human Agency	Medium	Medium	Medium	Experience

Note: Subjective meaning is based on empirical findings; prevalence on educational literature; research activity on finding literature in mainstream educational psychology.

¹ This does of course not mean that making money or attaining a leadership position is always meaningless. Some meaningful life goals, such as helping others or producing goods that improve other people's lot may require that a person earns and invests money or attains a leadership position.

² A search in PsycInfo (December 2016, week 2) that included ten educational psychology journals (British Journal of Educational Psychology; Contemporary Educational Psychology; Educational Psychology; Educational Psychology Review; Educational Psychologist; Instructional Science; Journal of Educational Psychology; Journal of Experimental Education; Learning and Instruction; Review of Educational Research) did not yield a single article with the term "religious education" in the abstract within the last ten years (2007-December 2016). Across all sources, there were 137 entries.

³ A search in PsycInfo for the same educational psychology journals as Footnote 1 yielded no article with the term "service learning" in the abstract within the last ten years (there was one article in 1999). Across all sources, there were 1134 entries.

⁴ A search in PsycInfo for the same the educational psychology journals as Footnote 1 yielded nine articles with the term "peer-tutoring" in the abstract within the last ten years. Across all sources, there were 126 entries.

⁵ A search in PsycInfo for the same educational psychology journals as Footnote 1 yielded no article with the terms "aesthetics" and "art education", respectively, in the abstract within the last ten years. Across all sources, there were 1751 entries for "aesthetics" and 218 entries for "art education".